

REMARKS

Claims 1-11, 14, 15, and 28-32 and 35 are pending in this application. By way of this Reply, independent claims 1 and 32 have been amended, without prejudice, to further define the claimed invention, dependent claims 2, 7, and 8 have been amended to recite proper antecedent basis based on the amendments to claim 1, claims 12, 33, and 34 have been cancelled, and claims 35 has been added. Applicant submits that no new matter has been introduced into this application by these amendments.

Claim Rejections

Claims 1-12 and 14-15 and claims 28-31 stand rejected under 35 U.S.C. § 103(a) as being obvious over Larson in view of Glorioso et al. (RE 37,095). Claims 32-34 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Larson in view of Jones (U.S. Patent No. 4,043,719), and optionally further in view of Savoy (U.S. Patent No. 5,194,323) or Porter (U.S. Patent Pub. No. 2002/0136888).

Larson discloses a process for manufacturing structural foam building panels comprising the following steps: (1) placing a lower board on a conveyor; (2) placing spacer bars (stiffener bars) on the first board; (3) laying foam on the first board; (4) placing an upper board or thin membrane on the spacer bars above the lower board; and (5) heating and curing the foam (see Figs. 1-6 of Larson).

Figure 7 of Larson discloses an alternate embodiment in which the stiffener bars are not used. Instead, guide rails are used in coordination with a first board to

form a trough in which the foam is deposited. See col. 7, lines 25-37. The foam is cured and adhered to a membrane, such as a foil. See col. 7, lines 38-40. After formation of a sufficient amount of cured first boards, a second board is placed on the conveyor, spacer bars are used as in the first embodiment. The foam is deposited on the second boards, and the cured first boards are placed on the spacer bars above the second board with the foil membrane facing downwardly. See col. 7, lines 45-60. The foam material then expands upwardly and grips the foil membrane. See col. 7, lines 60-63.

Larson expressly teaches that its metal edge guides are provided to “limit the outward movement of the adjacent stiffener bar (25) when the foam expands” See col. 3, line 64 – col. 4, lines 3. Larson also teaches the use of the metal edge guides to form a trough for the deposit of foam material. See col. 7, lines 25-37.

Figures 10 and 11 of Larson similarly disclose an alternate embodiment wherein the stiffener bars are not used. Instead a rectangular grid (128) is used to space the upper board apart from the lower board. See col. 7, line 66 – col. 8, line 21.

Jones teaches an apparatus for producing laminated foam boards wherein a rigid board is placed on a conveyor (10) comprising a series of platens (24). Each platen (24) has a pair of steel limiting blocks (56) secured to its end. See Fig. 3. Thus, the limiting blocks (56) move along with the conveyor (10). The upper laminated sheet (80) is positioned over the top of the limiting blocks (56). See Fig.

2. While the limiting blocks need not be the exact same height as the thickness of the resulting foam board, the limiting blocks need to be changed if there is a substantial change in the size of the foam core. See col. 4, lines 6-18 (“... for boards having a thickness between 0.5 inch and 1 ¼ inch, blocks of 1 inch thickness may be used. For a board having a thickness between 10 inch up to 2 inches, blocks of 2 inches thickness may be used.”).

Independent claims 1 and 32 of the present invention, as amended, recite in pertinent part, that the upper boards are deposited on a pair of stationary support rails at a desired height above the conveyor. This is distinguishable from Larson, because Larson uses stiffener bars (Figures 1-7, and 9) or a rectangular grid (Figures 10 and 11) to keep the upper board at predefined distance above the lower board. The resulting product incorporates these stiffener bars or rectangular grid. Larson does not teach or suggest using its metal guides as a support for its upper boards.

Stiffener bars or a grid are not used in the presently claimed invention to keep the upper board at a predefined distance above the lower board, as expressly taught in Larson. Instead, the conveying system includes a pair of stationary support rails, such as guide rails (39, 40) to support the upper boards. Because the support is a part of the conveying system, the resulting structural insulated panels do not include the support, as in the end product of Larson.

To the extent that Larson discloses the use of guide rails (*see* Figs. 3-5 and 7), these guide rails are only used to limit the outward movement of the stiffener bars (see Larson at col. 3, line 64 – col. 4, line 3), and are not used to keep the upper board at a defined distance above the lower board. In addition, to the extent that embodiment shown in Fig. 7 of Larson does not require stiffener bars, it is distinguishable from the present invention because as discussed above, the guide rails are used to form a trough to deposit the foam material on the first board. A foil membrane is then placed over the first board in place of a second board. The first board is then cured and placed above a second board, which again uses stiffener bars to support the first board at a desired height above the second board.

Furthermore, Jones does not resolve the shortcomings of Larson. As discussed above, the steel limiting blocks (56) in Jones are part of the conveyor, and move along with the conveyor. This distinguishable from the stationary support rails used in the present invention.

The stationary support rails of the presently claimed invention are advantageous over stiffener bars in Larson and steel limiting blocks in Jones because it allows the thickness of the foam core to be easily adjusted by adjusting the height of legs (41). See Figure 3 of the present invention. In order to adjust the height of the foam core in Larson, the size of the stiffener bars must be changed. Similarly, in Jones, if a substantial change in the size of the foam core is required, the size of the limiting blocks must be changed. Thus, the stationary support rails

of the present invention are advantageous in reducing costs and labor when a change in the size of the foam core is required.

Independent 1, as amended, and dependent claim 35, are further distinguishable from Larson and Jones because neither reference suggests or discloses a buttress provided on the conveyor which positively drives the upper boards along the pair of stationary support rails at a complementary position over the respective lower boards and expanding catalyzed foam mixture. Because the references provide stiffener bars (Larson) and limiting blocks (Jones) which move along with conveyor to provide a support for the upper boards, there would be no motivation to provide buttresses along the conveyor to drive the upper boards.

Glorioso was cited in the Office Action in combination with Larson for its disclosure of an extruder. However, Glorioso does not resolve the above-identified shortcomings in the prior art. Savoy and Porter were cited in the Office Action in combination with Larson and Jones as an example of a foam sandwich panel in which no side stiffener bar is used (Office Action at pg. 5). However, Savoy and Porter do not resolve the above mentioned shortcomings in Larson or Jones, and are distinguishable for at least the same reasons discussed above.

Accordingly, Applicants respectfully request withdrawal of the rejections of pending claims 1-11, 14, 15, and 28-32 and 35.

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Conclusion

If the Examiner believes that any additional minor formal matters need to be addressed in order to place this application in condition for allowance, or that a telephone interview will help to materially advance the prosecution of this application, the Examiner is invited to contact the undersigned by telephone at the Examiner's convenience.

In view of the foregoing remarks, Applicant respectfully submits that the pending claims of the present application are in condition for allowance and a notice to that effect is respectfully requested.

Respectfully submitted,

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